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AMENDMENT UNDER 37 C.F.R. § 1.116
EXPEDITED PROCEDURE
GROUP 2834
PATENT APPLICATION

#9/Response ^{AF}
Hawkins
8/27/02

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

Docket No: Q65157

Naoya HASHIMOTO, et al.

Appln. No.: 09/892,845

Group Art Unit: 2834

Confirmation No.: 2909

Examiner: Perez, G.

Filed: June 28, 2001

For: ELECTROMAGNETIC DEVICE

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AMENDMENT UNDER 37 C.F.R. § 1.116

ATTN: BOX AF
Commissioner for Patents
Washington, D.C. 20231

In response to the Office Action dated May 24, 2002, please consider the remarks as submitted herewith.

REMARKS

Claims 1-6 have been examined.

Preliminary Matters

Applicants would like to thank the Examiner for indicating that the proposed drawing corrections filed on March 6, 2002, are approved.

Rejection of Claims 1 and 2 Under 35 U.S.C. § 103(a)

The Examiner has maintained the rejection of claims 1 and 2 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Applicants' admitted prior art (APA) in view of Ryang et al. (U.S. Patent No. 6,159,600). For the following reasons, Applicants traverse these rejections.

In maintaining the rejection of these claims, the Examiner asserts that the fact that Applicants have recognized another advantage that would flow naturally from "following the suggestion" of the prior art cannot be the basis of patentability when the differences would otherwise be obvious. However, Applicants submit that the Examiner has not provided a suggestion or motivation, either implicitly or explicitly in the prior art, for reasonably combining Applicants' admitted prior art and Ryang in order to arrive at Applicants' invention.

When applying 35 U.S.C. § 103, the references must be considered as a whole and must suggest the desirability and thus the obviousness of making the combination. *See Hodosh Block Drug Co., Inc.*, 786 F.2d 1136 (Fed. Cir. 1986); see also MPEP 2141.01. In addition, the references must be viewed without the benefit of impermissible hindsight vision afforded by the

claimed invention. *See id.* Further, Applicants submit that “A patentable invention may lie in the discovery of the source of a problem even though the remedy may be obvious once the source of the problem is identified. This is part of the ‘subject matter as a whole’ which should always be considered in determining the obviousness of the invention under 35 U.S.C. § 103.” *In re Sponnoble*, 405 F.2d, 578, 585 (CCPA 1969). However, the discovery of the cause of a problem does not always result in a patentable invention. *See In re Wiseman*, 596 F.2d 1019, 1022 (CCPA 1979). A different situation exists where the solution is obvious from prior art which contains the same solution for a similar problem. *See id.* To establish a prima facie case of obviousness, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to the one of ordinary skill in the art, to modify the references or to combine reference teachings. In addition, there must be a reasonable expectation of success. See MPEP 2142 and 2143. Further, the prior art reference, or references when combined, must teach or suggest all of Applicants’ claim recitations. See MPEP 2141.03. However, even if the combination of the references teaches every element of the claimed invention, a rejection based on a prima facie case of obviousness is improper without a motivation to combine. *See In re Rouffet*, 149 F.3d 1350, 1357 (Fed. Cir. 1998). That is, obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. In particular, the test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the

problem to be solved as a whole would have suggested to those with ordinary skill in the art. See *In re Kotzab*, 217 F.3d 1365, 1370 (Fed. Cir. 2000).

Applicants submit that a person of ordinary skill in the art would not have been motivated to combine Applicants' admitted prior art with Ryang in order to arrive at Applicants' claimed combination. In particular, Applicants submit that all electrically insulating materials are not resistant to permeation by sulfur. Therefore, the Examiner must provide some motivation or suggestion to combine and modify the cited references in order to arrive at Applicants' claimed combination.

The Examiner asserts that Ryang makes up for the deficiencies of Applicants' admitted prior art. In particular, the Examiner asserts that Ryang teaches providing a protective layer composed of an electrically-insulating material resistant to permeation by sulfur compounds. However, Applicants submit that the Examiner is mischaracterizing the reference. For example, Ryang does not contemplate the problem of sulfur compounds permeating the bobbin and the outer molding and the formation of sulfur compounds on the surface of conducting wires, which thereby reduces the adhesive strength of an electrically-insulating layer to the conducting wire and results in wire breakage and short circuiting between the conducting wires.

Applicants submit that Ryang does not teach or suggest a protective layer composed of an electrically-insulating material resistant to permeation by sulfur compounds. Instead, Ryang teaches that in the high field intensity environment of an electrical motor, an insulating resin coating is subject to breakdown from oxide erosion resulting from surface corona and embedded corona (see col. 1, lines 32-36). Specifically, Ryang teaches that high field intensity leads to the

generation of oxygen plasma that oxidizes and breaks down an insulating resin (see col. 1, lines 36-38). In addition, Ryang teaches solving this problem by providing an insulating resin with a coating that comprises an oxygen plasma resistant polymer (see col. 3, lines 1-39). Further, Ryang teaches providing an insulating resin with corona resistance (see col. 1, lines 38-42).

In comparison, Applicants identify and solve a different problem by providing a different solution. Applicants teach that when a conventional stepping motor 1 is mounted to an automobile continuously variable transmission, it is entirely immersed in oil, which contains sulfur and organosulfur compounds (See page 4, lines 13-26). An example of a problem with immersing the stepping motor 1 in the oil is that the sulfur and the organosulfur compounds in the oil permeate the bobbins 53, the outer moldings 54, and the electrically-insulating layer 52, thereby reaching the copper wire 51 (See *id.*). As a result, chemical reactions occur at the surface of the copper wire 51, giving rise to a state of decreased adhesive strength of the electrically-insulating layer 52 to the copper wire 51 (See *id.*). Another problem is that when the temperature of the oil becomes greater than vaporization temperatures of volatile components in the oil due to heat generated by the coils 7, the electrically-insulating layer 52 of the conducting wires 50 is more likely to be permeated by sulfur and there is a greater likelihood of short circuiting occurring between the conducting wires 50 (See page 5, lines 9-14).

Applicants teach solving these problems by providing “preventing means comprising forming said bobbin and said outer molding of an electrically-insulating material resistant to permeation by sulfur compounds,” as recited in Applicants’ claim 1.

Thus, Applicants submit that, when confronted with this problem, a person of ordinary skill in the art at the time of the invention would not have looked to Ryang, which discloses solving a problem of breakdown from oxide erosion resulting from surface corona and an embedded corona. Therefore, Applicants submit that there would not have been a suggestion or motivation to combine the cited references in order to arrive at Applicants' independent claim 1, and therefore, the rejection of this claim should be withdrawn.

The Examiner asserts that the motivation to combine Applicants' admitted prior art and Ryang would have been for the purpose of avoiding degradation of materials under a high filed intensity environment. However, Applicants submit that this is the problem addressed by Ryang, not Applicants' invention, and therefore, a person of ordinary skill in the art reasonably would not have been motivated to combine Applicants' admitted prior art and Ryang in order to arrive at Applicants' claimed combination. Moreover, Applicants submit that, in order to make the jump from the combination of Applicants' admitted prior art and Ryang to Applicants' claimed combination, impermissible hindsight must be employed.

In addition, assuming *arguendo* that a person of ordinary skill of the art would have been motivated to combine the admitted prior art and Ryang, Applicants submit that this combination still would not arrive at Applicants' claimed combination. For example, Ryang discloses coating wires with an insulating resin. However, Applicants' claim 1 recites, *inter alia*, "preventing means comprising forming said bobbin and said outer molding of an electrically-insulating material resistant to permeation by sulfur compounds." Ryang does not contemplate forming a bobbin out of sulfur resistant material. Moreover, Ryang does not contemplate forming an outer

molding out of sulfur resistant material. Thus, Applicants submit that neither the Applicants' admitted prior art nor Ryang, either alone or in combination, teaches or suggests all of the recitations of Applicants' independent claim 1, and therefore, the rejection of this claim should be withdrawn.

In addition, Applicants submit that claim 2 is also patentable over Applicants' admitted prior art and Ryang at least by virtue of its dependency from independent claim 1, and therefore, the rejection of claim 2 also should be withdrawn.

Rejection of Claims 3 and 4 Under 35 U.S.C. § 103(a)

The Examiner has maintained the rejection of claims 3 and 4 under 35 U.S.C. § 103(a) as allegedly being unpatentable over the admitted prior art (APA) in view of Miyao et al. (U.S. Patent No. 5,691,058 hereinafter "Miyao"). Applicants respectfully traverse the rejection.

Applicants submit that a person of ordinary skill in the art would not have been motivated to combine Applicants' admitted prior art with Miyao in order to arrive at Applicants' claimed combination. In particular, Applicants submit that all electrically insulating materials are not resistant to permeation by sulfur. Therefore, the Examiner must provide some motivation or suggestion to combine and modify the cited references in order to arrive at Applicants' claimed combination.

The Examiner asserts that Miyao makes up for the deficiencies of Applicants' admitted prior art. In particular, the Examiner asserts that Miyao teaches a protective layer composed of

an electrically-insulating material resistant to permeation by sulfur compounds. However, Applicants submit that the Examiner is mischaracterizing the reference.

For example, Applicants submit that Miyao does not contemplate the problem of sulfur compounds permeating a protective layer coated on an electrically-insulating layer to form sulfur compounds on the surface of conducting wires, which thereby reduces the adhesive strength of an electrically-insulating layer to the conducting wire and results in wire breakage and short circuiting between the conducting wires. Instead, Miyao teaches a sheet material and a prepreg for electrical insulation using glass flakes to provide an electrical insulation layer having higher partial discharge resistance and dielectric resistance (See col. 1, lines 62-67, see also col. 2, lines 26-38, see also the “Abstract”).

On the other hand, Applicants identify and solve a different problem by providing a different solution. Applicants solve the problem of permeation of sulfur into the electrically-insulating layer, which results in a chemical reaction at the surface of the conducting wire. Therefore, Applicants submit that, when confronted with this problem, a person of ordinary skill in the art at the time of the invention would not have been motivated to combine the admitted prior art and Miyao in order to arrive at Applicants’ claimed combination. Therefore, Applicants submit that there would not have been a suggestion or motivation to combine the cited references in order to arrive at Applicants’ independent claim 3, and therefore, the rejection of this claim should be withdrawn.

The Examiner asserts that the motivation to combine Applicants’ admitted prior art and Miyao would have been for the purpose of providing a high dielectric break down strength under

large mechanical distortion. However, Applicants submit that this is the problem addressed by Miyao, not Applicants' invention, and therefore, a person of ordinary skill in the art reasonably would not have been motivated to combine Applicants' admitted prior art and Miyao in order to arrive at Applicants' claimed combination. Moreover, Applicants submit that, in order to make the jump from the combination of Applicants' admitted prior art and Miyao to Applicants' claimed combination, impermissible hindsight must be employed.

In addition, assuming *arguendo* that a person of ordinary skill of the art would have been motivated to combine the admitted prior art and Miyao, Applicants submit that this combination still would not arrive at Applicants' claimed combination. In particular, Applicants claim 3 recites, *inter alia*, "forming said protective layer of an electrically-insulating material resistant to permeation by sulfur compounds." However, Miyao does not teach or suggest forming a protective layer of sulfur resistant material. Thus, Applicants submit that neither the Applicants' admitted prior art nor Miyao, either alone or in combination, teaches or suggests all of the recitations of Applicants' independent claim 3, and therefore, this rejection should be withdrawn.

In addition, Applicants submit that claim 4 is also patentable over Miyao at least by virtue of its dependency from independent claim 3, and therefore, the rejection of claim 4 also should be withdrawn.

Rejection of Claims 5 and 6 Under 35 U.S.C. § 103(a)

The Examiner has maintained the rejection of claims 5 and 6 under 35 U.S.C. § 103(a) as allegedly being unpatentable over the admitted prior art (APA) in view of Bolon et al. (U.S. Patent No. 4,388,371 hereinafter "Bolon"). Applicants respectfully traverse these rejections.

The Examiner maintains that Bolon teaches a high-temperature solder layer coated on the copper wire and a protective layer that is composed of an electrically-insulating material resistant to permeation by sulfur compounds. Applicants submit that the Examiner is mischaracterizing the reference.

For example, Applicants submit that Bolon does not teach or suggest a high-temperature solder layer coated on the copper wire and a protective layer that is composed of an electrically-insulating material resistant to permeation by sulfur compounds. Instead, Bolon teaches a coated conductor 10 comprising a base wire 11 of metal, a base coat 12 of electrically-insulating, heat resistant, cured resin, and a bondable acrylic polymer overcoat 14 (See col. 7, lines 9-15). In addition, Bolon teaches using the bondable acrylic polymer overcoat to provide a self-bondable, electrically insulated magnet wire that has excellent adhesive or bonding strength between wire strands or turns (See col. 2, lines 65-68). Further, Bolon teaches that the acrylic polymers are resistant to the fluorinated hydrocarbons commonly used in hermetic motors (See col. 3, lines 32-34).

However, Applicants submit that Bolon does not teach or suggest using a material that is resistant to permeation by sulfur compounds. That is, Bolon does not even contemplate the problem of permeation of a protective layer by sulfur compounds.

On the other hand, Applicants identify and solve this different problem by providing a new and unique solution. That is, Applicants solve the problem of permeation of sulfur into the electrically-insulating layer, which results in a chemical reaction at the surface of the conducting wire, by providing at least “means for preventing sulfur compounds from permeating said protective layer,” as recited in Applicants’ claim 5 (See also page 11, lines 20-29). Specifically, Applicants teach solving these problems by providing “preventing means comprising forming said protective layer of an electrically-insulating material resistant to permeation by sulfur compounds,” as further recited in Applicants’ claim 5.

The high-temperature solder is less likely to react with the sulfur and organosulfur compounds than copper. Therefore, even if the sulfur and organosulfur compounds permeate the protective layer, sulfur compounds are not formed on the surface of the high-temperature solder layer as a result of chemical reactions between the sulfur and organosulfur compounds and the high-temperature solder layer. Thus, there is no decrease in adhesive strength of the protective layer to the high-temperature solder layer. As a result, the short-circuiting tolerance and wire-breakage tolerance of the conducting wire are improved. Bolon does not teach or suggest the above-mentioned facts.

Thus, Applicants submit that neither the admitted prior art nor Bolon teaches or suggests all of Applicants’ claimed recitations, and therefore, this rejection should be withdrawn.

In addition, Applicants submit that claim 6 is also patentable over Bolon at least by virtue of its dependency from independent claim 5, and therefore, the rejection of claim 6 also should be withdrawn.

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U.S. Application No. 09/892,845


Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned attorney at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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